SJC-12886

NEXTERA ENERGY RESOURCES, LLC vs. DEPARTMENT OF PUBLIC UTILITIES & others.[1]

Suffolk. April 9, 2020. - September 3, 2020.

Present: Gants, C.J., Gaziano, Lowy, Budd, Cypher, & Kafker, JJ.

Electricity. Electric Company. Public Utilities, Electric company, Electrical transmission line, Sale of electric power. Administrative Law, Agency's interpretation of statute, Agency's interpretation of regulation.

Civil action commenced in the Supreme Judicial Court for the county of Suffolk on July 22, 2019.

The case was reported by Lowy, J.

Donald E. Frechette for the petitioner.

Gerald J. Petros, Special Assistant Attorney General, for the respondent.

Jared S. des Rosiers, of Maine, Andrew O. Kaplan, Joshua D. Dunlap, Jed M. Nosal, & Jesse S. Reyes, for Central Maine Power Company, intervener, submitted a brief.

[1] Central Maine Power Company, intervener; NSTAR Electric Company, doing business as Eversource Energy, intervener; Massachusetts Electric Company and Nantucket Electric Company, each doing business as National Grid, interveners; and Fitchburg Gas and Electric Light Company, doing business as Unitil, intervener.

John K. Habib, Matthew S. Stern, Danielle C. Winter, Matthew Campbell, & Patrick H. Taylor, for NSTAR Electric Company & others, interveners, submitted a brief.

Mark C. Kalpin, Brett D. Carroll, & Christopher M. Iaquinto, for New England Power Generators Association, Inc., amicus curiae, submitted a brief.

KAFKER, J. This case concerns recent legislation intended to facilitate the development of hydroelectric and other clean energy sources by requiring electricity distribution companies in the Commonwealth to contract for the purchase of electricity generated through environmentally friendly means. The challenged power purchase agreements (PPAs) would allow electricity distribution companies to purchase clean electricity generated hydroelectrically by Hydro-Québec Energy Services (U.S.), Inc. (HQUS); this electricity would be supplied to New England via a transmission line running from Québec to Maine. According to the petitioner, NextEra Energy Resources, LLC, the PPAs at issue are inconsistent with statutory requirements that such agreements provide for "firm service" hydroelectric generation -- a term referring to hydroelectric power that is provided without interruption -- and that such generation be solely hydroelectric. Additionally, the petitioner objects to the PPAs' use of the New England Power Pool (NEPOOL) Generation Information System (GIS), a tracking system intended to account for each unit of electricity transmitted, claiming the tracking system is inadequate to ensure statutory compliance.

In its order, the Department of Public Utilities (department) concluded that the PPAs allowed for electricity delivery to be interrupted only in limited circumstances, and that provisions requiring HQUS to cure delivery shortfalls or pay damages create an appropriate incentive for HQUS to deliver energy and fulfill firm service requirements. Shortfalls were carefully circumscribed by the agreements, encompassing only a narrow set of circumstances outside HQUS's control. The department also concluded that the PPAs provide for delivery of energy generated by sixty-two specified hydroelectric generating facilities operated by HQUS, and the NEPOOL GIS tracking system was sufficient as it was the industry standard.

We affirm the department's order approving the PPAs. We conclude that the department reasonably and realistically interpreted the firm service requirement. We also uphold the department's conclusions that the PPAs guarantee electricity generated solely from hydroelectric generation and that the NEPOOL GIS tracking system is an adequate means to ensure the required accounting. These rulings were supported by substantial evidence and sufficient rationale.[2]

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[2] We acknowledge the amicus brief submitted by New England Power Generators Association, Inc. As is "[u]sually" the case, amicus argument "is limited to only those issues addressed by the parties" (citation omitted). Teamsters Joint Council No. 10 v. Director of the Dep't of Labor & Workforce Dev., 447 Mass. 100, 100 n.2 (2006). We therefore decline to address the

1. Background. In 2008, the Legislature passed St. 2008, c. 169, entitled "An Act relative to green communities," to "provide forthwith for renewable and alternative energy and energy efficiency in the commonwealth."[3] In 2016, the Legislature passed St. 2016, c. 188, entitled "An Act to promote

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argument that the power purchase agreements (PPAs) did not contract for incremental clean energy, i.e., more energy than is otherwise available to the market in the Commonwealth, as this argument was raised only by the amicus. See Finch v. Commonwealth Health Ins. Connector Auth., 459 Mass. 655, 669 n.13 (2011); General Mills, Inc. v. Commissioner of Revenue, 440 Mass. 154, 167 n.7 (2003), cert. denied, 541 U.S. 973 (2004).

[3] The Legislature passed this act the same year that it passed St. 2008, c. 298, the Global Warming Solutions Act (GWSA). "Each act addresses a separate but related piece of the clean energy economy," and both "provide policymakers with a broad array of tools, including 'targeted and technology-specific policies[,] . . . economy-wide and market-based mechanisms,' and renewable energy portfolio standards and energy efficiency improvements, to advance a clean energy economy while reducing emissions and addressing the unique threats that climate change poses to the Commonwealth." Kain v. Department of Envtl. Protection, 474 Mass. 278, 282 (2016), quoting Report of the Senate Committee on Global Warming and Climate Change, No Time to Waste, at 10 (Feb. 13, 2015); Executive Office of Energy and Environmental Affairs, Massachusetts Clean Energy and Climate Plan for 2020, Executive Summary, at 7 (Dec. 29, 2010). The GWSA was "designed to make Massachusetts a national, and even international, leader in the efforts to reduce the greenhouse gas emissions that cause climate change," and "establishes significant, ambitious, legally binding, short- and long-term restrictions on those emissions" (quotation omitted). New England Power Generators Ass'n, Inc. v. Department of Envtl. Protection, 480 Mass. 398, 399 (2018). The GWSA mandates a twenty-five percent reduction from 1990 greenhouse gas emission levels by 2020 and an eighty percent reduction by 2050. G. L. c. 21N, §§ 3, 4. Statute 2018, c. 169, and the provisions at issue in this case play an essential role in achieving these objectives by requiring the generation of clean energy.

energy diversity," which, among other changes, amended St. 2008, c. 169, by setting up a competitive bidding process for contracts to finance the production of clean energy. St. 2016, c. 188, § 12. This amendment was effectuated by adding §§ 83B and 83D to St. 2008, c. 169 (Sections 83B and 83D). Id.

Section 83D required electric distribution companies to jointly and competitively solicit proposals for eligible clean energy generation resources no later than April 1, 2017, and, provided reasonable proposals had been received, to enter into cost-effective, long-term contracts -- known as PPAs -- to facilitate the financing of clean energy generation resources equal to approximately 9.45 million megawatt-hours (MWh) per year by December 31, 2022. As required by statute, the department must approve a PPA before it can become effective. See Section 83D (e); 220 Code Mass. Regs. § 24.03 (2017). "Clean energy generation" includes "firm service hydroelectric generation," which Section 83B defines as "hydroelectric generation provided without interruption for [one] or more discrete periods designated in a long-term contract."[4] The

[4] Regulations promulgated by the Department of Public Utilities (department) define firm service hydroelectric generation as "hydroelectric generation provided without interruption for one or more discrete periods designated in a long-term contract, including but not limited to multiple hydroelectric run-of-the-river generation units managed in a portfolio that creates firm service though the diversity of multiple units." 220 Code Mass. Regs. § 24.02 (2017). That

phrase "without interruption" is not defined by statute or the accompanying regulations.

On July 23, 2018, NSTAR Electric Company, doing business as Eversource Energy; Massachusetts Electric Company and Nantucket Electric Company, each doing business as National Grid; and Fitchburg Gas and Electric Light Company, doing business as Unitil (companies), filed separate petitions with the department, pursuant to Section 83D and 220 Code Mass. Regs. §§ 24.00 (2017), for approval of individual PPAs for the purchase of hydroelectric generation and associated environmental attributes from HQUS. The PPAs were negotiated and submitted to the department after the companies and the Department of Energy Resources (DOER) selected a project submitted jointly by Hydro Renewable Energy, Inc., an HQUS affiliate, and Central Maine Power Company (CMP) after a three-stage bidding process.[5]

Under the PPAs, the power will be delivered to New England over a transmission line that starts at a substation in Thetford

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description applies here, as Hydro-Québec Energy Services (U.S.), Inc. (HQUS), will provide the energy guaranteed under the PPAs from sixty-two specified hydroelectric generating facilities.

[5] The three-stage bidding process, initiated by a request for proposals, met the requirements of St. 2008, c. 169, § 83D, as inserted by St. 2016, c. 188, § 12 (Section 83D), and is not at issue in this appeal.

Mines, Québec, and runs sixty-five miles to the Canada-Maine border. The power would then be transmitted by means of a new transmission line owned by CMP, named New England Clean Energy Connect, that travels another 145 miles to a substation in Lewiston, Maine. The PPAs specifically provide for a twenty-year service term beginning on the commercial operation date.

The material terms of the three PPAs are nearly identical. We describe those terms only as they relate to this appeal. The PPAs provide that HQUS's obligations to sell and deliver hydroelectric-generated energy, and the companies' obligations to buy the same, "are firm and not subject to interruption except to the extent caused by Force Majeure, excused under Section 4.2(a)[6] or cured in accordance with Section 4.3(c) [governing curable delivery shortfalls]."

"Curable delivery shortfalls" under section 4.3(c) of the PPAs are shortfalls that result from (1) nonexcused outages, i.e., outages or reductions in total transfer capacity other than outages or reductions caused by force majeure, scheduled maintenance, regulatory decisions, or outages in the transmission line from Québec to the Canada-Maine border; or (2) outages or reductions in that same transmission line due to

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[6] Outages or reductions below capacity caused by force majeure, scheduled maintenance, regulatory decisions, or outages in the transmission line from Québec to the Canada-Maine border are referred to as "excused outages" in the PPAs.

a physical condition affecting its transfer ability. The PPAs allow HQUS to cure these shortfalls by delivering qualified shortfall energy[7] during the shortfall cure period.[8]

Under the PPAs, "uncured delivery shortfalls" are delivery shortfalls HQUS has not cured by the delivery of qualified shortfall energy. Shortfalls that are not cured must be remedied by cover damages. These damages include any penalties or additional costs incurred by the companies as a result of having to purchase replacement energy. Additionally, under section 9.2(f) of the PPAs, if "[t]he aggregate Uncured Delivery Shortfalls in any Shortfall Cure Period are more than twenty percent (20%) of the Guaranteed Qualified Clean Energy for such Shortfall Cure Period (a 'Defaulted Delivery Shortfall')," HQUS has defaulted on the PPAs. Only shortfalls due to transmission line failures are counted when calculating the ratio of defaulted delivery shortfalls. In other words, section 9.2(f)

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[7] Qualified shortfall energy is hydroelectric energy delivered over any transmission line to the companies during the twenty-year term of the PPAs. This energy must also be tracked in GIS to ensure it is hydroelectric-generated energy.

[8] A shortfall cure period is defined in the PPAs as "the same Contract Year in which the Curable Delivery Shortfall occurred or in the immediately succeeding Contract Year."

does not encompass any decision by HQUS to sell the power to a third party.[9]

The PPAs further provide that HQUS is responsible for maintaining participation in NEPOOL GIS "to register, monitor, track, and transfer Environmental Attributes" in order to demonstrate that the energy delivered is qualified clean energy. NEPOOL is an industry association of energy market participants in the New England region. See 310 Code Mass. Regs. § 7.75(2) (2020). NEPOOL GIS is a database and certificate system operated by NEPOOL. See id.; Jones, James, & Huebner, Do You Know Who Owns Your Solar Energy? The Growing Practice of Separating Renewable Attributes from Renewable Energy Development and Its Impact on Meeting Our Climate Goals, 28 Fordham Envtl. L. Rev. 197, 216-217 (2017) (Jones). The NEPOOL GIS tracking system has been employed and relied on by State and Federal regulators and generators for nearly twenty years to track renewable energy generation and its environmental benefits in New England. The system accounts for the environmental attributes associated with each MWh of electricity produced. Jones, supra. Those attributes are recorded in the form of a certificate, which may be used to substantiate and track

[9] Instead, a decision by HQUS to sell the power to a third party would constitute a breach of the agreements, and would not constitute a delivery shortfall remediable by cover damages.

compliance with environmental regulations.[10] Id. See 310 Code Mass. Regs. § 7.75(2).

The department held a joint public hearing and procedural conference for the companies' petitions on August 15, 2018. It granted the petitioner's petitions to intervene as a full party in each of the three dockets. The department held joint evidentiary hearings on the three dockets in February 2019. It received testimony from fourteen witnesses at the hearings, including three witnesses called by the petitioner.

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[10] These certificates, also referred to as credits, function as an independent form of property right and may be sold to third parties separately from the electricity to which the certificates relate: the certificates have value to these third parties because they may use those certificates to comply with environmental regulations or qualify for legal benefits. See, e.g., Indeck Me. Energy LLC v. Comm'r of Energy Resources, 454 Mass. 511, 512-513 (2009) (explaining that certificate, "once purchased, is counted toward [an] electricity supplier's compliance" with environmental laws); Jones, James, & Huebner, Do You Know Who Owns Your Solar Energy? The Growing Practice of Separating Renewable Attributes from Renewable Energy Development and Its Impact on Meeting Our Climate Goals, 28 Fordham Envtl. L. Rev. 197, 197-198 (2017) (Jones).

NEPOOL GIS users are bound by a complex set of operating rules that, among other things, govern how certificates are created, how certificates may be transferred, and how the department, DEP, and other regulatory agencies may access information on the system's database. See, e.g., New England Power Pool Generation System Operating Rules, Rules 2.1, 3.1, 5.3 (Jan. 1, 2020). The department (formerly the Department of Telecommunications and Energy Resources) helped develop these rules. New England Generation Information System, D.T.E. 03-62-A, at 9, 24 n.14 (2004).

On June 25, 2019, the department issued its order approving the PPAs. It concluded that the PPAs provide firm service hydroelectric generation without interruption from hydroelectric generation alone as required by Section 83D. It further found that the PPAs included "a schedule of guaranteed qualified clean energy to be delivered from HQUS on a monthly basis for each year of the contract term."

The department determined that the PPAs allowed electricity delivery to be interrupted in only three circumstances: (1) force majeure; (2) deliveries excused during negative locational marginal pricing (LMP) periods[11]; and (3) curable delivery shortfalls. The department explained that the provisions in the PPAs requiring HQUS to cure delivery shortfalls were consistent with Section 83D's firm service requirement. It reasoned that, "[g]iven the nature of electricity transmission, delivery

[11] Locational marginal pricing (LMP) is a method of pricing electricity based on its value at different times and locations. See Sacramento Mun. Util. Dist. v. Federal Energy Regulatory Comm'n, 616 F.3d 520, 524-525 (D.C. Cir. 2010) ("LMP consists of three components: [i] the cost of generation; [ii] the cost of congestion; and [iii] the cost of transmission losses"). Negative LMP periods are periods in which the supply of electricity is greater than demand. The department concluded that the delivery of electricity generated in such periods would be wasteful. Cf. Barton Windpower, LLC vs. Northern Ind. Pub. Serv. Co., U.S. Dist. Ct., No. 13-CV-5329 (N.D. Ill. June 18, 2018) ("When the LMP is negative, market participants . . . can stop generating power, or they can continue to generate power and sell it to [the system operator] at the negative price [i.e., pay [the system operator] to take the power]").

shortfalls will occasionally happen," and therefore "any long-term contract for renewable energy generation requires reasonable provisions to address them." The department found that the PPAs' curable delivery shortfall provisions appropriately "allow HQUS to fulfill its firm delivery obligations while reasonably accommodating transmission outages that are not within its direct control."

Relatedly, the department also found that the cover damages provisions requiring HQUS to pay damages in the event that it fails to cure a shortfall "reasonably support the PPAs' firm energy delivery provision by (1) providing an appropriate incentive for HQUS to deliver energy during the winter months (and otherwise)[12] and (2) making ratepayers financially whole in the event that an uncured delivery shortfall should occur."

The department also concluded that the PPAs require HQUS to deliver, and the companies to purchase, energy derived solely from hydroelectric generation, as required under Section 83D.

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[12] The PPAs contain provisions that guarantee energy delivery on a year-round basis, including in winter months. The department rejected the petitioner's argument that the delivery shortfall provisions would allow HQUS to curtail delivery during winter months because it found that the PPAs "limit the delivery of qualified shortfall energy to the same season-peak period as when the curable delivery shortfall occurred, in [either] the same year or the immediately succeeding contract year." Additionally, the PPAs provide a method for reconciling differences in the economic value of the energy that was to be delivered when the shortfall occurred and the energy actually delivered to cure the shortfall.

It based this finding on the fact that the PPAs require all energy deliveries to derive from "energy produced by a hydroelectric generating resource," particularly the sixty-two specified hydroelectric generating facilities operated by HQUS. Although the PPAs describe these facilities as "consist[ing] predominantly of low-carbon and renewable hydro-electric energy" (emphasis added), the department dismissed the petitioner's argument that the use of the term "predominantly" would leave HQUS free to deliver energy from non-hydroelectric sources. It rejected this argument because the PPAs "unambiguous[ly]" require that any energy sold be from clean, hydroelectric generation.

Finally, the department concluded that the PPAs provide the energy generated must "be tracked in the NEPOOL GIS to ensure a unit-specific accounting" of the delivery of qualified clean energy (footnote omitted).[13] The department therefore concluded that the PPAs complied with Section 83D (j)'s requirement of unit-specific accounting for clean energy delivery. The department also found that NEPOOL GIS, "a well-established power

[13] "Unit energy" is energy imported into New England that is generated by specifically identified generation units assigned certificates for their respective, specific environmental attributes. "System energy," on the other hand, is power imported into New England without specifically identifying the specific generation unit. For such energy, NEPOOL GIS assigns the characteristics of the over-all mix of the fuel source and emissions of the source control area.

generation and associated environmental attribute tracking system used in the New England region," adequately ensured that "the Companies purchase clean energy generation as defined by statute, and not system energy that contains non-clean energy generation."

After the department issued its order, the petitioner appealed to a single justice of this court. The department and the intervening parties moved to reserve and report the matter to the full court, which the petitioner did not oppose. The matter was reserved and reported to the full court on January 27, 2020.

2. Discussion. a. Standard of review. This court may set aside or modify an agency's decision if it violates the Constitution, is in excess of the statutory authority or jurisdiction of the agency, is based upon an error of law, is made upon unlawful procedure, is unsupported by substantial evidence, is unwarranted by the facts found on the record as submitted, or is arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with the law. G. L. c. 30A, § 14 (7).

To enable this court to carry out its judicial review function, the agency must provide adequate subsidiary findings and reasoning to support its decision: although the agency may "evaluate evidence in light of its expertise, it cannot simply

use its expertise as a substitute for evidence in the record" (citation omitted). Fitchburg Gas & Elec. Light Co. v. Department of Pub. Utils., 460 Mass. 800, 812 (2011). Nevertheless, the agency decision is supported by substantial evidence so long as the record contains "such evidence as a reasonable mind might accept as adequate to support a conclusion." Id., quoting G. L. c. 30A, § 1 (6). See G. L. c. 30A, § 11 (5) ("Agencies may utilize their experience, technical competence, and specialized knowledge in the evaluation of the evidence presented to them").

When reviewing an administrative decision, "we must apply all rational presumptions in favor of the validity of the administrative action and not declare it void unless its provisions cannot by any reasonable construction be interpreted in harmony with the legislative mandate." New England Power Generators Ass'n, Inc. v. Department of Envtl. Protection, 480 Mass. 398, 408 (2018), quoting Consolidated Cigar Corp. v. Department of Pub. Health, 372 Mass. 844, 855 (1977). In analyzing the legislative mandate, we first determine whether the Legislature has spoken with certainty on the topic in question by using conventional tools of statutory interpretation. New England Power Generators Ass'n, Inc., supra at 404. If the statute is unambiguous, we give effect to the Legislature's intent. Id. "[I]f the Legislature has not

addressed directly the pertinent issue, we determine whether the agency's resolution of that issue may 'be reconciled with the governing legislation.'" Id., quoting Goldberg v. Board of Health of Granby, 444 Mass. 627, 633 (2005). In making this determination, "we afford 'substantial deference' to agency expertise," and will uphold the agency decision "unless a statute unambiguously bars the agency's approach." New England Power Generators Ass'n, Inc., supra at 405, quoting Goldberg, supra.

b. Firm service. The first issue is whether the PPAs include provisions that contradict Section 83D's "firm service" requirement. The petitioner argues that they do, pointing to certain clauses in the PPAs that, under the petitioner's reading, permit HQUS to interrupt service. Specifically, it points to (1) the contract provision allowing HQUS to cure delivery shortfalls; (2) the provision relating to cover damages; and (3) the provision allowing HQUS to decline to sell electricity during negative LMP periods. The department and the interveners counter that these provisions are necessary to deal with unforeseen shortfalls and other developments beyond its control, and that including these clauses in the PPAs is therefore consistent with the purpose of St. 2016, c. 188. We agree with the interpretation of the department and the interveners.

In reaching this conclusion, we emphasize that an interpretation of firm service without interruption to require no interruptions whatsoever, even if those interruptions are outside the parties' control, would amount to an otherworldly, unrealistic interpretation of the statute. See Wallace W. v. Commonwealth, 482 Mass. 789, 793 (2019). These are twenty-year contracts; some interruptions over twenty years are unavoidable. Further, the contingencies in place are reasonable, reflecting industry practices and practical realities, including the need to provide electricity during periods of inevitable interruption and strong disincentives against noncompliance or gamesmanship.

At issue is the meaning of the phrase "without interruption" in Section 83B's definition of firm service. We begin by recognizing that this court gives "great deference" to the department's expertise in cases involving "interpretation of a complex statutory and regulatory framework." Alliance to Protect Nantucket Sound, Inc. v. Department of Pub. Utils., 461 Mass. 166, 178 (2011), quoting Cambridge v. Department of Telecomm. & Energy, 449 Mass. 868, 875 (2007). We must also be "careful to 'avoid any construction of statutory language which leads to an absurd result, or that otherwise would frustrate the Legislature's intent.'" Wallace W., 482 Mass. at 793, quoting Bellalta v. Zoning Bd. of Appeals of Brookline, 481 Mass. 372, 378 (2019).

While Section 83B defines "firm service," it does not define "without interruption." Here, the department drew on its specialized expertise when it explained that, "[g]iven the nature of electricity transmission, delivery shortfalls will occasionally happen," and as a result, "any long-term contract for renewable energy generation requires reasonable provisions to address them." In essence, the department has interpreted "without interruption" to mean that energy must have guaranteed availability to the maximum extent feasible, with contingencies in place to minimize the impact of unavoidable disruptions, as opposed to reading the phrase literally to mean without any interruption whatsoever for any reason at all, even if outside of the parties' control. The department's interpretation is a commonsense reading of the statute: the real world is unpredictable, especially over twenty years, and this court properly defers to the department's view that at least some shortfalls are inevitable. "Firm service" (or "firm power") is a common term in the energy industry and among regulators: the United States Court of Appeals for the District of Columbia Circuit has explained that "[f]irm service is contractually guaranteed; non-firm service is scheduled on an 'as available' basis and is subject to interruption." Sacramento Mun. Utils. Dist. v. Federal Energy Regulatory Comm'n, 428 F.3d 294, 295 n.3 (D.C. Cir. 2005). See North Star Steel Co. v. United States, 58

Fed. Cl. 720, 723 n.2 (2003) (firm service means power that is guaranteed to always be available, while non-firm service may be interrupted for any reason at any time).

In contrast, it would be absurd, or at least unrealistic, to force clean energy providers to guarantee that their service will never be interrupted for any reason: even the petitioner acknowledges that "occasional delivery shortfalls may occur in a force majeure context."[14] Thus, all the parties understand that a literal interpretation of "without interruption" is inappropriate.

The question then becomes whether the particular contingencies provided in the PPAs to deal with potential interruptions facilitate the firm service requirement rather than frustrate it. We examine each in turn.

i. Cure of delivery shortfalls. In ruling that the delivery shortfall provisions of the PPAs were consistent with Section 83D's firm service requirement, the department focused on the fact that the events triggering this clause are outages and reductions in transmission capacity outside the parties' control. The department also cited several contract provisions that minimize opportunities for HQUS or the companies to profit

[14] Force majeure is defined in section 10.1 of the PPAs, and includes (among other circumstances) mechanical or equipment breakdown caused by hurricanes, floods, blizzards, terrorism, and the like.

from interrupting delivery of electricity through use of the shortfall delivery clause. For example, the PPAs require any shortfall deliveries to be made "in the same Contract Year in which the Curable Delivery Shortfall occurred or in the immediately succeeding contract year," and any shortfall occurring in a winter or summer month may only be cured by a shortfall delivery in another winter or summer month, respectively.[15] The PPAs also provide a formula for reconciling price differences in the electricity that was supposed to be delivered and the electricity that was actually delivered, meaning that any profits that could be made through an opportunistic breach of the PPAs are likely to be reallocated.

Together with the exclusivity provision, which bars HQUS from selling energy guaranteed to the companies under the PPAs to a third party, these requirements restrict the ability of any party to the PPAs to take advantage of seasonal or time-of-day price differences. This comports with the department's interpretation of the firm service requirement. The PPAs therefore do not contradict the requirement; nor do they create a "right" for HQUS to interrupt delivery in any period, as the petitioner contends.

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[15] The PPAs further specify that shortfall energy that was to be delivered between 8 A.M. and 11 P.M. must be delivered during this same time frame in such a winter or summer month.

ii. Cover damages. Provisions in the PPAs governing cover damages also do not permit HQUS to simply not deliver energy and pay damages instead, as the petitioner argues. On the contrary, the cover damages clauses provide incentive for HQUS to fulfill its firm service requirements and to cure any delivery shortfalls. They are typical of long-term contracts like the ones before us, as experts for the companies testified in the departmental proceedings.

Cover damages are triggered by shortfalls outside HQUS's control, such as those caused by a physical condition of the transmission line. As the department found in its order, cover damages help make the companies whole, and also minimize situations in which the companies are in a position where they need to purchase power elsewhere. Cover damages are also not only compensatory: they include penalties. Thus, even if HQUS could theoretically charge a higher price for its energy elsewhere, this benefit could be financially outweighed by having to pay penalties to the companies on top of the value of the electricity HQUS was to deliver. And as with the shortfall delivery clause, this portion of the contract must be understood in light of the exclusivity portions of the PPAs, which restrict HQUS from selling its hydroelectric generation to other buyers.

The cover damages provisions thus create a favorable economic outcome for the companies, as HQUS is financially

responsible for any favorable price differences resulting from the shortfall and any later make-up delivery. It is therefore unrealistic to assume that HQUS would first commit a breach of the agreement by selling the power guaranteed the companies elsewhere, charge a higher price to the third-party buyer, and still make a profit after both compensating the companies and paying them penalties.[16] Instead, we conclude that the cover damages provisions in the PPAs further guarantee firm service by providing a strong incentive for HQUS to deliver energy and fulfill firm service requirements.

The petitioner also argues that section 9.2(f) of the PPAs -- which it claims allows for interruptions of up to twenty percent of the annually contracted-for energy delivery -- goes beyond the occasional outage to which the department referred in its order, and cannot comport with the firm service requirement. The petitioner contends that the department does not support its conclusion that this provision addresses only what the department calls "occasional outages" with adequate subsidiary findings.

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[16] Moreover, it is not the role of this court to read a contract under the assumption that the parties will shirk their respective obligations. See Rigs v. Sokol, 318 Mass. 337, 343 (1945) (court's assumption in interpreting contracts is that parties ordinarily contemplate contract will be performed and provisions for penalties are "intended as security for performance and not as a price for the privilege of nonperformance").

The petitioner's interpretation of section 9.2(f) of the PPAs is misguided. The petitioner argues that this provision allows for interruption of service for twenty percent of every contract year -- i.e., seventy-three days a year for the twenty-year term of the PPAs -- so long as HQUS remedies the interruption by way of cover damages. This interpretation reads this clause in isolation, ignoring all of the other provisions requiring compliance and penalizing noncompliance. The petitioner's interpretation of section 9.2(f) denies the reality that HQUS reaps no benefit from having to pay cover damages under the agreements, as discussed supra. The twenty percent figure does not identify a target performance measure, but a figure identifying a contractual default, triggering all kinds of other consequences, including those related to financing.[17]

We therefore reject the petitioner's arguments and conclude that these provisions are in line with Section 83D's firm service requirement.

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[17] As the department states in its order, "Section 83D requires an electric distribution company to demonstrate that any proposed long-term contract will facilitate the financing of the clean energy generation resource. To satisfy this requirement, an electric distribution company need not demonstrate that the long-term contract is necessary to secure project financing, only that it will assist in securing project financing," citing NSTAR Elec. Co., D.P.U. 12-30, at 40 (Nov. 26, 2012); Massachusetts Elec. Co. & Nantucket Elec. Co., D.P.U. 10-54, at 52-53 (Nov. 22, 2010).

iii. Negative LMP periods. Finally, the PPA provisions allowing HQUS to forgo delivery during negative LMP periods do not interfere with or contradict Section 83D's firm service requirement. That is because additional electricity transmission would not benefit either party during negative LMP periods.

LMP methodology is "used by electricity market operators across the country." Black Oak Energy, LLC v. Federal Energy Regulatory Comm'n, 725 F.3d 230, 233 (D.C. Cir. 2013). LMP is a way to price a given unit of electricity at a particular time and location. "Under LMP, the price any given buyer pays for electricity reflects a collection of costs attendant to moving a [unit] of electricity through the system to a buyer's specific location on the grid." Id. at 233-234. See Sacramento Mun. Util. Dist. v. Federal Energy Regulatory Comm'n, 616 F.3d 520, 524 (D.C. Cir. 2010) ("With an LMP-based rate structure, prices are designed to reflect the least-cost of meeting an incremental [unit of demand for energy] at each location on the grid, and thus prices vary based on location and time"). "The cost of generation can be thought of as the 'baseline cost' of serving electricity (known in the industry as 'load') to another location on the system in a hypothetical, congestion-free environment. Congestion, in turn, drives up costs because it requires [electricity providers] to dispatch more expensive

generators to meet demand. The cost of congestion results in different prices at different nodes of the system, depending on how congested the wires leading to those nodes are" (citations omitted). Black Oak Energy, LLC, supra at 234.

The PPAs specify that, if "the LMP at the Delivery Point is negative, or, in the reasonable opinion of [HQUS], is likely to become negative, then [HQUS] . . . shall be under no obligation to schedule or transfer Deliveries of Qualified Clean Energy to the Delivery Point during such period." Alternatively, Exhibit D of the PPAs allows the companies to take a credit against the contract price for negative LMP periods. Given that LMP measures the value of an additional unit of electricity at a particular time and location, a negative LMP period is one in which this value is negative. In other words, at the relevant time and location, the supply of energy exceeds the demand for it, and there is a surplus. In such a scenario, it would be wasteful to deliver additional hydroelectric generation. The negative LMP provisions therefore comport with Section 83D's requirement that contracts procured be "cost-effective," Section 83D (d) (5) (iii); see 220 Code Mass. Regs. § 24.03(1), and provide a form of price protection for the companies and -- by extension -- ratepayers in the Commonwealth.[18]

[18] We disagree with the petitioner's argument that the department was required to make some subsidiary finding

Beyond the fact that such delivery would be cost-ineffective, it would also not serve the Legislature's purpose in enacting Section 83D. It was not the purpose of the Legislature to require generation of hydroelectric energy for its own sake; instead, the purpose was to generate clean electricity that meets the energy demands of the Commonwealth, thus reducing greenhouse gas emissions and achieving other environmental goals. See St. 2008, c. 169, preamble; Kain, 474 Mass. at 281-282. Delivering energy during negative LMP periods serves neither the Commonwealth's energy needs nor the environmental purposes promoted by Section 83D.

None of the provisions cited by the petitioner and discussed supra permits unilateral interruptions. They are instead aimed at maintaining cost-effectiveness and making the companies and their customers financially whole in case of interrupted service. We therefore conclude that the department's interpretation of Section 83D's firm service requirement was reasonable, and that interpretation was

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regarding its conclusion that delivery of energy in these periods would be wasteful. The concept of negative LMP periods speaks for itself, and the department's commonsensical conclusion is one that is reflected in other PPAs and the rules of system operators. See Barton Windpower, LLC, U.S. Dist. Ct., No. 13-CV-5329 (N.D. Ill. June 18, 2018) (explaining custom when LMP is negative for market participants to stop generating power or to continue to generate power and sell it to system operator).

correctly applied to the PPAs in this case.[19] The department's conclusions were supported by substantial evidence, adequate findings, and sufficient rationale.

c. Hydroelectric generation alone. The next issue is whether the department's finding that the PPAs provide the delivery of energy produced through hydroelectric generation alone was supported by substantial evidence, adequate subsidiary findings, and sufficient rationale. We conclude that it was.

The record contains "substantial evidence" supporting the department's finding that the PPAs provide for hydroelectric generation "alone." For example, the PPAs provide that HQUS is "solely responsible" for demonstrating that "the Hydro-Québec Power Resources from which the Products are Delivered are Qualified Clean Energy Generation Units." The "Hydro-Québec Power Resources" are the sixty-two specified hydroelectric

[19] We similarly reject the petitioner's argument that the PPAs do not identify one or more discrete periods in which HQUS is to deliver firm service. To the extent discrete periods are meant to be limited to temporal periods other than the entire contractual term, as the petitioner claims, each of the PPAs provides a monthly schedule for the entire twenty-year life of the agreements that surely meets this requirement. The department made such a finding in its order. Additionally, provisions in the PPAs requiring HQUS to cure delivery shortfalls within a defined shortfall cure period do not invite interruptions by allowing HQUS to "defer cure anywhere from [twelve] months and [one] day up to a maximum of [twenty-three] months and [twenty-nine] days," as the petitioner claims, but instead provide a remedy for the inevitable occurrence of interrupted service.

generating stations; "Qualified Clean Energy Generation Units" are electricity generating facilities "capable of producing Qualified Clean Energy, or Qualified Shortfall Energy"; and both "Qualified Clean Energy" and "Qualified Shortfall Energy" are defined as energy produced by the "Hydro-Québec Power Resources" and tracked by the NEPOOL GIS "to ensure unit-specific accounting" of the delivery of hydroelectric energy. The PPAs thus unambiguously require HQUS to make available to the companies generation capacity from hydroelectric facilities, and to continuously verify this generation through a tracking system (NEPOOL GIS). The PPAs also excuse the companies from accepting or paying for any certificate from HQUS that does not evince generation from the specified hydroelectric sources. Beyond such contractual clauses, the department also made an undisputed subsidiary finding that HQUS's hydroelectric generation facilities have adequate capacity to provide the statutorily mandated 9.45 million MWh of purely hydroelectric generation.

The petitioner argues nonetheless that the department's reliance on the language of the PPAs and the use of NEPOOL GIS tracking was insufficient. Instead, the petitioner claims that the department was required to make a finding that, "under the laws of physics," energy delivered by HQUS and flowing through the transmission line comes solely from hydroelectric generation. The department rejects the contention that it was

required to "predict whether HQUS might breach its contractual obligation in the future, or expound on 'the laws of physics.'" Instead, the department's position is that it was sufficient that the PPAs contractually required HQUS to deliver only hydroelectrically generated energy. The department explains that this is the "only analysis that it reasonably could conduct," because once electricity enters the New England power grid, it is impossible to distinguish the source of any given unit of energy, unless there is a dedicated power line for a given source of electricity. No such dedicated power line was required by the relevant statute or regulations. Again, we conclude that the department's interpretation of the statutory and regulatory requirements is reasonable and supported by the evidence.

Although framed by the petitioner as a question about the laws of physics or the sufficiency of the evidence, the issue whether the PPAs provide for hydroelectric generation "alone" is necessarily linked to a question of statutory construction, namely, what it means for electricity to come from "hydroelectric generation alone." Under Section 83D, the companies were required to enter into "long-term contracts" to purchase "hydroelectric generation" deriving "from hydroelectric generation alone." Sections 83B, 83D (a). See 220 Code Mass. Regs. §§ 24.02, 24.03(1). If the use of the word "alone" is

important, then the use of the word "generation" -- as opposed to "transmission" -- is no less significant. Both terms clearly support the department's interpretation of the statutory and regulatory requirements.

Fortunately (for this court), the laws of physics are not in dispute. Nor is there any inconsistency between the laws of physics and the contractual requirements. See Northern Ind. Pub. Serv. Co. v. Federal Energy Regulatory Comm'n, 954 F.2d 736, 737 (D.C. Cir. 1992) ("When electricity reaches an intersection of several alternative transmission paths, it will flow along . . . guided by the laws of physics rather than the intention of [contractual] parties . . ."). The petitioner and the department essentially agree on the physics involved in transmitting electricity from Canada to Maine for distribution in Massachusetts.

The department analogizes the physics involved as follows: "It is like [forty] people pouring water into an Olympic swimming pool. Someone later drawing water from the pool cannot distinguish between the molecules contributed by each person. Not surprisingly, the association of market participants in the electric grid that helps guide matters affecting the system calls itself the New England Power Pool (NEPOOL)." In the Olympic pool analogy, one can identify the individual sources of water that are poured into the pool, and can therefore measure

what each person is contributing to the pool. One cannot, however, trace water that is already in the pool to a particular contributor.

In this vein, the department's order focuses on the fact that the PPAs require the generation of the purchased electricity to occur at sixty-two specified hydroelectric sources. So long as this generation can be verified and the amount that is generated is received by the companies, the department does not understand the statute to require that the delivery system for this electricity (i.e., the transmission lines) be exclusive of other sources. This is a reasonable reading of the phrase "hydroelectric generation alone" (emphasis added), particularly in light of the physics involved. It is also unclear why imposing the requirement of a dedicated transmission line for hydroelectric generation would serve the Legislature's purpose in enacting Section 83D if the fact of hydroelectric generation can be verified in other ways, particularly given the additional cost and environmental harm caused by developing such a line. Such a requirement is absent from the language of Sections 83B and 83D, which refer only to hydroelectric generation.[20]

[20] The petitioner argues that without ensuring that the transmitted energy is from hydroelectric generation only, the Commonwealth would be paying for clean energy that is being used elsewhere. However, that is a fiction so long as the

In sum, the department's construction of the statute and the regulations is reasonable and supported by the evidence. It serves the environmental purposes promoted by the act, and is consistent with the "laws of physics."

d. NEPOOL GIS tracking system. As discussed supra, Section 83D (j) requires PPAs to "utilize an appropriate tracking system to ensure a unit specific accounting of the delivery of clean energy" to accurately measure progress in achieving the Commonwealth's environmental goals. The purpose of Section 83D's tracking requirement is to allow DEP, in consultation with DOER, to "accurately measure progress in achieving the commonwealth's [emissions-related] goals." Section 83D (j). The NEPOOL GIS tracking system employed in the instant case is the industry standard developed for such measurement. It has been developed by regulators, and it has been universally accepted by the industry just for such purpose. See, e.g., Ferrey, Threading the Constitutional Needle with Care: The Commerce Clause Threat to the New Infrastructure of Renewable Power, 7 Tex. J. Oil Gas & Energy L. 59, 62-63 (2011) (Ferrey) (explaining how tracking systems for renewable energy

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Commonwealth is paying for what is being generated, what is being generated is actually clean energy, and the Commonwealth maintains ownership of the environmental attributes associated with that energy. See Jones, 28 Fordham Envtl. L. Rev. at 206-207.

certificates are essential to success of -- and operation of -- renewable portfolio standard [RPS] programs); N.H. Rev. Stat. Ann. § 362-F:6 (2014) (mandating electric RPS program to use NEPOOL GIS certificate tracking).

The department provided a relatively short yet sufficient explanation of its finding that use of the NEPOOL GIS is consistent with Section 83D (j). The department concluded that the use of NEPOOL GIS is "well-established" and that the PPAs require HQUS to utilize it "in compliance with all relevant NEPOOL GIS operating rules." The department was entitled to draw on its expertise to conclude that the NEPOOL GIS is an appropriate tracking system under Section 83D (j). See New England Power Generators Ass'n, Inc. 480 Mass. at 405; Goldberg, 444 Mass. at 635. The department's expertise in this arena includes knowledge and experience specific to the NEPOOL GIS itself, as the department (formerly the Department of Telecommunications and Energy Resources) participated in the development of NEPOOL GIS's operating rules. See New England Generation Info. Sys., D.T.E. 03-62-A, at 9, 24 n.14 (2004). Indeed, the department's role in developing the NEPOOL GIS operating rules was to ensure the NEPOOL GIS's efficacy as an emissions labeling tool in accordance with the emissions labeling statute that the department is charged with administering. See id. at 1; 220 Code Mass. Regs. § 11.06

(2016). These operating rules include rules relating to the use of certificates for unit-specific tracking of how electricity is generated as well as rules for coordinating with the department and DEP. See New England Power Pool Generation System Operating Rules, Rule 2.1(a) & Appendix 5.3 (Jan. 1, 2020). See also Alliance to Protect Nantucket Sound, Inc., 461 Mass. at 178 (describing "great deference" owed to department's expertise in cases involving "interpretation of a complex statutory and regulatory framework").

The department also concluded that the PPAs provide sufficient protections to ensure adequate tracking of energy attributes. The PPAs define "Certificate" as "an electronic certificate generated pursuant to the [NEPOOL] GIS Operating Rules . . . to represent certain generation attributes of each [unit of electricity] generated." The PPAs require HQUS to "transfer to [the companies] all of the right, title[,] and interest in and to . . . any and all Certificates[] associated with Qualified Clean Energy or any Qualified Shortfall Energy." Further, as discussed supra, the PPAs require HQUS to "comply with all [NEPOOL] GIS Operating Rules including, without limitation, such rules relating to the creation, tracking, recording and transfer of all Environmental Attributes associated with Qualified Clean Energy or Qualified Shortfall Energy" purchased under the agreements, where "Environmental

Attributes" is a defined term that refers to "any Certificates issued pursuant to the [NEPOOL] GIS in connection with Energy generated by [HQUS's hydroelectric generating systems]."

The record provides additional support for the department's finding. Specifically, in September 2018, upon request from the companies pursuant to 310 Code Mass. Regs. § 2.09 (2004), DEP issued an advisory ruling, concluding that NEPOOL GIS tracking of energy units and attributes satisfies Section 83D (j)'s requirements. This ruling was in the record before the department. While such rulings are not binding, Massachusetts courts give them deference when they relate to a statute that the agency is charged with interpreting and applying, and so long as they are consistent with the text and purpose of that statute. See Brookline v. Medical Area Serv. Corp., 8 Mass. App. Ct. 243, 258–259 (1979). Cf. Sullivan v. Sleepy's LLC, 482 Mass. 227, 232 n.11 (2019). It is particularly appropriate to give weight to DEP's advisory ruling approving of the use of the NEPOOL GIS, as the stated purpose of Section 83D (j)'s tracking requirement is to allow DEP to monitor the Commonwealth's progress in reducing greenhouse gas emissions.

A contrary conclusion -- that NEPOOL GIS is not an appropriate tracking system for these PPAs -- flies in the face of industry practice relying on tracking systems to comply with

RPS programs. See New England Generation Info. Sys., D.T.E. 03-62-A, at 5-9; Ferrey, 7 Tex. J. Oil Gas & Energy L. at 62-63.

NEPOOL GIS not only issues and tracks certificates for all MWh of generation and load produced in the control area of the Independent System Operator for New England (ISO-New England), as well as imported MWh from adjacent control areas, but provides emissions labeling for the New England load serving entities by tracking the emissions attributes for the region's generators. Market participants in New England commonly use and rely on NEPOOL GIS to track clean energy generation and its associated environmental attributes, and have long done so.[21] Market participants also use NEPOOL GIS to trade renewable energy credits, which are vital to enforcing RPS programs. See Ferrey, 7 Tex. J. Oil Gas & Energy L. at 62-63; Jones, 28 Fordham Envtl. L. Rev. at 216-217 & n.8.

The NEPOOL GIS tracking system is not just the industry standard, but the only mechanism recognized as sufficient to identify supplier-specific labeling information for identifying resources. See Massachusetts Elec. Co. & Nantucket Elec. Co., D.P.U. 08-51, at 2 & n.7 (June 13, 2013). Concluding that

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[21] DOER relies on NEPOOL GIS to track the Commonwealth's renewable energy portfolio standards. 225 Code Mass. Regs. § 14.09 (2016); 225 Code Mass. Regs. § 15.09 (2014); 225 Code Mass. Regs. § 16.09 (2019). DEP similarly relies on NEPOOL GIS to monitor compliance with its clean energy standard. 310 Code Mass. Regs. § 7.75 (2020).

NEPOOL GIS's tracking system does not satisfy Section 83D's requirements would require the creation of an entirely new system, which is both impractical and incompatible with the Commonwealth's goals to advance renewable energy.[22]

Because the department's conclusions were supported by substantial evidence, and the department relied on its expertise and knowledge of the NEPOOL GIS system to conclude that the system's tracking mechanism was adequate to "ensure that the Companies purchase clean energy generation as defined by statute, and not system energy that contains non-clean energy generation," we affirm the department's decision.

3. Conclusion. The department applied a reasonable interpretation of Section 83D's firm service requirement, concluding that the words "without interruption" must accommodate the reality of inevitable outages, even while delivery of energy must be guaranteed to the maximum extent

[22] Any argument that NEPOOL GIS does not physically track the energy HQUS will deliver back to the hydroelectric generation station is a repeat of the argument addressed supra, i.e., that the PPAs do not adequately ensure that HQUS will generate and deliver hydroelectric power alone. The petitioner's arguments seem to misunderstand how the tracking system works: NEPOOL GIS tracks the attributes associated with the energy HQUS delivers into the system, while the meters at the delivery point measure the quantity of energy. Requiring more, i.e., that the parties ascertain the attributes of the energy already in the transmission line, or construct a new transmission line devoted solely to energy generated by HQUS, is at worst an exercise in futility and at best unnecessary and cost-ineffective.

possible. The provisions allowing HQUS to cure delivery shortfalls, pay cover damages for uncured shortfalls, and forgo delivery during negative LMP periods all comply with this reasonable interpretation of the statute. The department's conclusion in this regard, as well as its conclusions that the PPAs provide for the procurement of energy from hydroelectric generation alone and that the NEPOOL GIS tracking system is an appropriate system to meet Section 83D's requirements, were supported by substantial evidence, adequate findings, and sufficient rationale. We therefore affirm the department's approvals of the PPAs pursuant to Section 83D.

So ordered.